ABSTRACTS

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Use of location technology to create a digital guide for material flow analysis in the prototype and innovation centre

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Abstract: This paper discusses the use of RTLS (Real-Time Location System) technology to track and optimize material flows in the Prototyping and Innovation Center. The objective was to develop and implement a digital tracking sheet that allows accurate real-time monitoring of material movement. For this purpose, an RTLS network was experimentally built in the centre to provide continuous monitoring of selected production processes from the input of the semi-finished product to the completion of the final product. As part of the testing, various elements of production were monitored, including material movement, logistics operations and pallet truck handling. The RTLS software enabled detailed analysis of material flow using spaghetti maps, heatmaps and zone maps, which provided valuable data on movement trajectories and identified bottlenecks in production. The analysis revealed the problem of long delays in the manual grinding area after machining on the mill, indicating the need to optimize this process. The results confirm that the implementation of an RTLS system contributes to a more efficient management of production operations, minimizing downtime and improving material flow continuity. In addition, the system enables better production planning and provides data for further optimization of logistics processes within industrial production.